

2.0 SUMMARY OF “BEFORE” AND “AFTER” STUDIES

In 1995, the Congestion Management Task Force recommended “average speed” to be the measure-of-effectiveness in evaluating the operational performance of arterial streets. Therefore, the recommended signal timing modifications (Task 3, Section 4.0) were evaluated by conducting travel time studies along each of the six corridors *before* signal timing improvements were made, and again *after* implementation of the new signal timings. Also, “before” and “after” intersection delay studies were conducted at 34 signalized intersections to measure the amount of stopped-delay experienced by vehicles at these individual intersections.

The stated goal of the City is to have its streets operate at or above LOS ‘C’, which describes stable operations. However, ability to maneuver and change lanes in mid-block locations may be more restricted. “The key action by the Task Force was the adoption of an average speed of 18 mph as the ‘trigger’ for initiating a study that could result in street improvement projects. An average speed of 16 mph was adopted as the ‘trigger’ at which the study recommendations would be implemented.”¹ These ‘trigger speeds’ were established for arterials with a typical free flow speed of 35 mph. Figure 3 illustrates the model of the trigger mechanism discussed, using average speed as the basic measure of congestion, for arterials with typical free flow speeds of 35 mph. This figure also reveals the relationship between average speed on the study segments and the corresponding level-of-service (LOS).

Based on the 1994 and 2000 Highway Capacity Manuals (HCM), 18 mph represents the threshold between LOS ‘C’ and ‘D’ for arterials with 35 mph free flow speeds. According to Exhibit 15-2 of the 2000 HCM, also shown as Table 1, the corresponding ‘trigger speeds’ for an arterial with a typical free flow speed of 40 mph are 22 mph and 19.5 mph. The corresponding ‘trigger speeds’ for an arterial with a typical free flow speed of 50 mph are 27 mph and 24 mph.

Table 1: Urban Street LOS by Class

Urban Street Class	I	II	III	IV
Range of free-flow speeds (FFS)	55 to 45 mph	45 to 35 mph	35 to 30 mph	35 to 25 mph
Typical FFS	50 mph	40 mph	35 mph	30 mph
LOS	Average Travel Speed (mph)			
A	> 42	> 35	> 30	> 25
B	> 34-42	> 28-35	> 24-30	> 19-25
C	> 27-34	> 22-28	> 18-24	> 13-19
D	> 21-27	> 17-22	> 14-18	> 9-13
E	> 16-21	> 13-17	> 10-14	> 7-9
F	≤ 16	≤ 13	≤ 10	≤ 7

¹ The Mayor’s Congestion Management Task Force, “Final Report for the City of Lincoln, Nebraska”, October 10, 1996